

## DESCRIPTION OF TABLES AND CHARTS.

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Table I gives the data ordinarily needed for climatological studies for about 158 Weather Bureau stations making simultaneous observations at 8 a. m. and 8 p. m., seventy-fifth meridian time daily, and for about 41 others making only one observation. The altitudes of the instruments above ground are also given.

Table II gives a record of precipitation the intensity of which at some period of the storm's continuance equaled or exceeded the following rates:

Duration, minutes .....	5	10	15	20	25	30	35	40	45	50	60
Rates per hour (inches) .....	3.00	1.80	1.40	1.20	1.08	1.00	0.94	0.90	0.87	0.84	0.80

In cases where no storm of sufficient intensity to entitle it to a place in the full table has occurred, the greatest precipitation of any single storm has been given, also the greatest hourly fall during that storm.

Table III gives, for about 30 stations of the Canadian Meteorological Service, the means of pressure and temperature, total precipitation and depth of snowfall, and the respective departures from normal values, except in the case of snowfall.

Table IV gives the heights of rivers referred to zeros of gages. These zeros are arbitrarily fixt, but, as a rule, are set at the plane of lowest water, if possible. The river gages are read once daily (8 a. m., seventy-fifth meridian time), and in times of emergency more frequently. The table shows the highest and lowest of all readings taken, the means of the regular daily readings, and the absolute monthly ranges.

The publication of the data from cooperative observers, heretofore appearing as Table II, was discontinued with the issue for December, 1907. The values will continue to be published in the monthly reports of the climatological services of the several states, and in the usual manner in the Annual Report of the Chief of Bureau.

Chart I.—Hydrographs for seven principal rivers of the United States.

Chart II, tracks of centers of high areas, and Chart III, tracks of centers of low areas. The roman numerals show number and chronological order of the centers. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the observations at 8 a. m. and 8 p. m., seventy-fifth meridian time. Within each circle is also given (Chart II) the highest barometric reading and (Chart III) the lowest reading reported at or near the center at that time, and in both cases as reduced to sea level and standard gravity.

Chart IV.—Total precipitation. The scale of shades showing

the depth is given on the chart. Where the monthly amounts are too small to justify shading, and over sections of the country where the stations are too widely separated, or the topography is too diversified to warrant reasonable accuracy in shading, the actual depths are given for a limited number of representative stations. Amounts less than 0.005 inch are indicated by the letter "T," and no precipitation by 0.

Chart V.—Percentage of clear sky between sunrise and sunset. The average cloudiness at each Weather Bureau station is determined by numerous personal observations between sunrise and sunset. The difference between the observed cloudiness and 100 is assumed to represent the percentage of clear sky, and the values thus obtained are the basis of this chart, which does not relate to the nighttime.

Chart VI.—Isobars and isotherms at sea level and prevailing wind directions. The pressures have been reduced to sea level and standard gravity by the method described by Prof. Frank H. Bigelow on pages 13–16 of the REVIEW for January, 1902. The pressures have also been reduced to the mean of the twenty-four hours by the application of a suitable correction to the mean of the 8 a. m. and 8 p. m. readings, at stations taking two observations daily, and to the 8 a. m. or 8 p. m. observation, respectively, at stations taking but a single observation. The diurnal corrections so applied will be found in Table 27, Volume II, Annual Report of the Chief of Weather Bureau, 1900–1901, pp. 140–164.

The isotherms on the sea-level plane have been constructed by means of the data summarized in chapter 8 of the Annual Report of the Chief of the Weather Bureau for 1900–1901, Volume II. The correction  $t_0 - t$ , or temperature on the sea-level plane minus the station temperature, as given by Table 48 of the above report, is added to the observed surface temperature to obtain the adopted sea-level temperature.

The prevailing wind directions are determined from hourly observations at the great majority of the stations; a few stations, having no self-recording wind direction apparatus, determine the prevailing direction from the daily or twice-daily observations only.

Chart VII.—Total snowfall. This is based on the reports from regular and cooperative observers, and shows the depth in inches and tenths of the snowfall during the month. In general, the depth is shown by lines inclosing areas of equal snowfall, but in special cases figures are also given.

Chart VIII.—Depth of snow on ground at the end of month, expressed in inches and tenths.

TABLE I.—*Climatological data for U. S. Weather Bureau stations, January, 1908.*

## MONTHLY WEATHER REVIEW.

JANUARY, 1908

TABLE I.—Climatological data for U. S. Weather Bureau stations, January, 1908—Continued.

Stations.	Elevation of instruments.		Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.								Precipitation, in inches.		Wind.		Partly cloudy days. Cloudy days. Average cloudiness during daylight, tenths. Total snowfall.								
	Barometer above sea level, feet.	Thermometers above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement miles.	Prevailing direction.	Maximum velocity.					
	Stations.	Barometer above sea level, feet.	Thermometers above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement miles.	Prevailing direction.	Maximum velocity.				
<i>Up. Lake Reg—Cont.</i>																									
Escanaba.	612	40	82	29.28	29.97	-.08	20.4	+.2	20	28	-12	.80	13	28	18	15	74	.77	-0.8	8	8,462	sw.	37		
Grand Haven.	632	54	92	29.28	29.98	-.09	27.0	+.2	21	23	0	.80	22	24	25	22	73	1.67	-1.1	10	11,040	sw.	48		
Grand Rapids.	707	121	162	29.20	30.00	-.06	26.4	+.2	45	21	32	2	.80	20	21	24	21	83	1.49	-1.3	10	9,787	sw.	39	
Houghton.	668	66	74	29.18	29.94	-.11	19.2	+.4	48	19	28	-19	.30	10	39	15	15	74	0.95	-1.1	13	5,680	nw.	34	
Marquette.	784	77	116	29.12	29.96	-.08	21.5	+.5	56	20	28	1	.9	29	14	26	19	71	2.10	+0.1	14	9,649	sw.	38	
Port Huron.	688	70	120	29.26	29.98	-.08	24.0	+.2	43	21	31	-9	.30	17	22	18	18	80	1.95	+0.1	11	10,756	sw.	50	
Sault Sainte Marie.	614	40	61	29.28	29.96	-.07	21.2	+.2	49	20	25	2	.9	29	7	30	15	12	0.89	-0.3	14	7,705	nw.	41	
Chicago.	829	140	810	29.11	30.03	-.07	28.6	+.4	49	21	35	0	.29	22	25	27	23	80	2.05	-0.0	0	12,930	sw.	44	
Milwaukee.	681	122	139	29.26	30.02	-.06	24.5	+.4	47	44	21	32	-6	.29	18	24	18	17	8.24	+1.2	6	9,269	w.	43	
Green Bay.	617	49	86	29.29	29.98	-.08	19.8	+.5	52	44	21	28	-15	.30	11	32	18	14	.76	0.90	-0.8	8,897	sw.	47	
Duluth.	1,188	11	47	28.70	29.98	-.11	14.9	+.4	45	46	20	25	-29	.29	5	30	12	9	79	0.83	-0.6	6	10,369	sw.	48
<i>North Dakota.</i>							16.7	+12.6																	
Moorhead.	940	8	57	28.98	30.05	-.09	15.7	+18.0	54	20	27	-29	29	5	87	14	12	88	0.16	-0.6	4	6,758	nw.	33	
Bismarck.	1,674	8	57	28.20	30.07	-.06	21.4	+14.7	60	19	34	-14	29	8	48	17	12	70	0.24	-0.8	4	8,016	nw.	43	
Devils Lake.	1,452	11	44	28.33	29.98	-.14	12.9	+12.6	51	19	25	-28	29	1	44	10	6	76	0.10	-0.5	2	8,087	w.	40	
Williston.	1,875	14	56	27.97	30.04	-.07	16.8	+10.8	48	19	29	-22	29	5	46	14	11	82	0.04	-0.5	8	6,952	nw.	52	
<i>Upper Miss. Valley.</i>							26.9	+ 5.3																	
Minneapolis.	102	208		19.8			52	20	30	-25	29	10	86	...	...	75	0.96	-0.8	0.49	0.2	5	9,563	nw.	44	
St. Paul.	837	171	179	29.09	30.05	-.08	19.6	+ 8.0	49	20	30	-24	29	9	35	17	12	72	0.52	-0.4	0.4	8,269	nw.	46	
La Crosse.	714	71	87	29.24	30.05	-.06	21.6	+ 6.4	50	21	31	-25	29	12	29	29	29	...	0.34	-0.7	3	4,945	s.	25	
Madison.	974	70	78	28.98	30.03	-.07	22.2	+ 5.7	46	21	30	-10	29	15	26	20	16	77	0.97	-0.6	0.6	5,912	nw.	42	
Charles City.	1,015	8	58	28.93	30.06	-.08	20.2	+ 4.8	46	21	31	-5	29	14	39	18	16	83	0.40	-0.6	6	1,115	nw.	28	
Davenport.	606	71	79	29.37	30.07	-.05	26.6	+ 5.8	52	21	35	-2	29	18	26	24	19	75	0.69	-0.9	4	6,457	nw.	32	
Des Moines.	861	84	101	29.12	30.07	-.07	27.0	+ 6.6	58	21	37	-7	29	17	37	24	19	74	0.46	-0.8	3	7,272	nw.	30	
Dubuque.	698	100	117	29.29	30.05	-.04	24.8	+ 6.5	50	21	33	-6	29	16	31	22	18	75	0.70	-0.8	3	6,141	nw.	30	
Keokuk.	614	67	77	28.98	30.05	-.05	30.4	+ 6.7	55	21	39	0	29	22	28	25	21	75	0.51	-1.2	5	6,457	nw.	31	
Cairo.	856	87	98	29.11	30.11	-.05	36.8	+ 2.0	51	14	16	24	30	24	32	27	22	78	0.24	-1.0	11	7,476	n.	35	
La Salle.	536	56	64	29.48	30.08	-.03	26.9	+ 4.6	50	21	35	-1	29	19	24	24	20	77	0.96	-1.2	6	7,163	sw.	34	
Pearis.	609	11	45	29.38	30.07	-.05	26.8	+ 3.7	53	21	36	1	29	18	24	26	22	74	1.77	-0.5	6	5,692	s.	36	
Springfield, Ill.	644	10	92	28.86	30.03	-.05	29.8	+ 3.5	53	21	38	6	29	22	24	22	17	74	1.77	-0.5	8	5,976	s.	29	
Hannibal.	584	75	109	29.49	30.09	-.04	30.2	+ 3.5	57	21	40	4	29	21	28	28	20	81	1.04	-1.2	6	8,008	sw.	40	
St. Louis.	667	208	217	29.44	30.07	-.07	34.0	+ 8.0	61	21	42	9	29	26	30	25	72	2.08	-0.2	7	9,710	s.	34		
<i>Missouri Valley.</i>							30.0	+ 6.8																	
Columbia, Mo.	784	11	84	29.28	30.10	-.08	32.0	+ 4.8	58	21	42	5	23	22	32	32	...	1.18	-1.1	4	7,326	s.	35		
Kansas City.	968	116	181	29.04	30.11	-.04	34.2	+ 8.0	59	20	44	4	29	25	27	29	21	61	0.18	-1.0	0	11,553	s.	49	
Springfield, Mo.	1,324	98	104	28.64	30.08	-.06	33.9	+ 2.6	59	21	43	10	16	25	28	30	25	74	2.20	-0.5	2	9,029	s.	38	
Iola.	984	40	47	29.03	30.12	-.02	35.7	+ 8.1	59	21	47	11	31	25	30	30	...	0.65	-0.3	2	7,227	s.	33		
Topeka.	85	89					34.0	+ 8.4	60	20	45	8	29	23	33	33	...	0.09	-0.8	3	7,691	s.	34		
Lincoln.	1,189	11	84	28.79	30.10	-.05	31.0	+ 9.8	59	20	42	4	29	20	34	25	17	60	0.28	-0.8	3	9,145	s.	54	
Omaha.	1,105	115	121	28.88	30.10	-.05	30.2	+ 9.7	55	20	40	1	29	20	31	25	18	66	0.28	-0.4	4	8,150	nw.	40	
Valentine.	558	47	57	27.29	30.10	-.02	29.0	+ 10.8	53	20	42	-3	31	16	43	23	18	72	0.16	-0.4	4	8,905	nw.	44	
Sioux City.	1,135	96	164	28.82	30.08	-.06	25.4	+ 9.8	51	18	36	-7	29	15	38	30	22	70	0.16	-0.3	2	10,124	nw.	50	
Pierre.	1,572	70	75	28.36	30.09	-.04	26.6	+ 12.7	60	20	38	-4	31	15	43	22	15	64	0.22	-0.3	5	7,308	nw.	46	
Huron.	1,306	66	67	26.64	30.09	-.07	21.4	+ 11.9	51	20	35	30	25	29	3	15	13	75	0.19	-0.8	2	7,229	nw.	39	
Yankton.	1,288	49	57	28.71	30.08	-.08	26.0	+ 10.5	57	20	38	-5	29	15	44	...	12	69	0.12	-0.4	2	7,221	w.	36	
<i>Northern Slope.</i>							25.8	+ 6.8																	
Havre.	2,505	11	44	27.32	30.03	-.07	26.2	+ 12.7	54	19	39	-13	31	14	42	23	19	78	0.16	-0.5	3	7,723	sw.	52	
Miles City.	2,371	26	47	27.48	30.13	+.01	26.9	+ 12.4	51	19	39	-8	31	17	31	22	16	67	0.06	-0.4	6	4,719	sw.	36	
Helena.	4,110	8	56	25.82	30.16	+.01	25.8	+ 5.8	51	19	35	-8	31	17	31	22	16	67	0.50	-0.4	6	4,894	sw.	44	
Kalispell.	2,962	8	54	26.98	30.15	+.08	24.4	+ 4.8	45	7	33	-14	31	16	25	22	19	80	1.70	+0.1	9	3,262	nw.	30	
Rapid City.	3,284	46	50	26.60	30.13	+.08	29.5	+ 8.0	61	18	42	-9	31	17	43	28	19	67	0.22	-0.2	2	4,729	nw.	30	
Cheyenne.	6,088	56	64	28.96	30.12	+.07	28.0	+ 2.4	61	8	39	-13	31	16	39	28	14	56	0.						

TABLE I.—*Climatological data for U. S. Weather Bureau stations, January, 1908—Continued.*

\* More than one date.      † Record incomplete.

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded 0.25 in any 5 minutes, or 0.80 inch in 1 hour, during January, 1908, at all stations furnished with self-registering gages.

Stations.	Date	Total duration.		Total amount of precipita- tion.	Excessive rate.		Amount before excessive be- gan.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Abilene, Tex.	5-6			0.48															0.15		
Albany, N. Y.	12			0.61														*			
Alpena, Mich.	31			0.60														*			
Amarillo, Tex.	2-3			0.22														*			
Anniston, Ala.	31			1.94														0.29			
Asheville, N. C.	11			2.16														0.35			
Atlanta, Ga.	31			2.05														0.30			
Atlantic City, N. J.	7-8			1.10														0.23			
Augusta, Ga.	11	9:55 a. m.	8:00 p. m.	1.20	11:45 a. m.	12:00 m.	0.96	0.17	0.45	0.52									*		
Baltimore, Md.	12			1.61														0.50			
Bentonville, Ark.	8-4			1.27														0.11			
Binghamton, N. Y.	27			0.80														0.20			
Birmingham, Ala.	11			1.10														0.41			
Bismarck, N. Dak.	30-31			0.14														*			
Block Island, R. I.	12			0.64														0.24			
Boise, Idaho.	19-20			0.14														0.04			
Boston, Mass.	7			0.96														0.27			
Buffalo, N. Y.	26			0.66														0.27		*	
Cairo, Ill.	31			1.02														0.30			
Canton, N. Y.	26-27			0.60														*			
Charles City, Iowa.	31			0.40														*			
Charleston, S. C.	11-12			0.90														0.33			
Charlotte, N. C.	11	10:30 a. m.	6:00 p. m.	1.41	3:58 p. m.	4:00 p. m.	0.74	0.24	0.88									0.38			
Chattanooga, Tenn.	11-12			1.08														0.38			
Cheyenne, Wyo.	14-15			0.16														*			
Chicago, Ill.	12			1.22														*			
Cincinnati, Ohio.	11-12			0.49														0.17			
Cleveland, Ohio.	12			0.82														*			
Columbia, Mo.	11-12			0.40														*			
Columbus, S. C.	11	9:25 a. m.	4:15 p. m.	1.84	1:19 p. m.	1:54 p. m.	0.75	0.06	0.10	0.17	0.23	0.29	0.51	0.59				*			
Columbus, Ohio.	26			0.22														*			
Concord, N. H.	7-8			0.82														*			
Corpus Christi, Tex.	16			0.11														*			
Davenport, Iowa.	12			0.38														0.23			
Del Rio, Tex.	2-3			0.29														*			
Denver, Colo.	15			0.50														*			
Des Moines, Iowa.	30-31			0.32														0.09			
Detroit, Mich.	11-12			1.81														*			
Dodge, Kans.	15			0.02														0.16			
Dubuque, Iowa.	31			0.65														*			
Duluth, Minn.	31			0.13														*			
Eastport, Me.	29-30			1.92														0.18			
Elkins, W. Va.	26-27			0.61														0.38			
Erie, Pa.	12			0.64														*			
Escanaba, Mich.	31			0.38														*			
Evansville, Ind.	31			0.64														0.17			
Fort Smith, Ark.	3-4			1.60														0.39			
Fort Worth, Tex.	30-31			0.70														*			
Galveston, Tex.	16	D. N.	D. N.	0.40	1:00 a. m.	1:10 a. m.	0.01	0.15	0.32									*			
Grand Haven, Mich.	31			0.68														*			
Grand Rapids, Mich.	31			0.68														*			
Green Bay, Wis.	31			0.52														*			
Hannibal, Mo.	31			0.35														*			
Harrisburg, Pa.	12			0.81														0.18			

## MONTHLY WEATHER REVIEW.

JANUARY, 1908

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc.—Continued.

Stations.	Date	Total duration.		Total amount of precipita- tion.	Excessive rate.		Amount before excessive rate gain.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Hartford, Conn.	7-8			1.58															*		
Hatters, N. C.	7			1.41															0.44		
Huron, S. Dak.	30-31			0.19															*		
Indianapolis, Ind.	11-12			1.47															*		
Iola, Kans.	8			0.59															0.12		
Jacksonville, Fla.	6-7			1.58															0.88		
Jupiter, Fla.	18-19			1.51															0.50		
Kansas City, Mo.	8			0.08															*		
Keokuk, Iowa	22			0.15															*		
Key West, Fla.	10-11			0.28															*		
Knoxville, Tenn.	4			1.28															0.25		
La Crosse, Wis.	31			0.31															*		
Le Salle, Ill.	81			0.49															*		
Lexington, Ky.	11-12			0.45															0.11		
Lincoln, Nebr.	31			0.26															*		
Little Rock, Ark.	31			1.02															0.49		
Los Angeles, Cal.	14	D. N.	5:45 a. m.	0.71	4:16 a. m.	4:23 a. m.	0.09	0.42	0.53												
Louisville, Ky.	11-12			0.72																	
Lynchburg, Va.	7			1.76															0.20		
Macon, Ga.	81			3.37															0.30		
Madison, Wis.	81			0.54															0.54		
Marquette, Mich.	15-16			0.48															*		
Memphis, Tenn.	31			1.76															0.66		
Meridian, Miss.	31			0.98	4:05 p. m.	4:18 a. m.	0.20	0.11	0.89	0.63											
Minneapolis, Minn.	30-31			0.36	7:05 p. m.	8:19 a. m.	0.58	0.20	0.47	0.69	0.95	1.20	1.30								
Mobile, Ala.	10	4:35 p. m.	D. N.	2.66	7:50 p. m.	8:19 p. m.	0.58	0.20	0.47	0.69	0.95	1.20	1.30								
Do	30-31	D. N.	4:10 p. m.	2.66	8:16 p. m.	9:06 p. m.	0.75	0.06	0.12	0.21	0.30	0.43	0.45	0.48	0.50	0.51	0.58	0.69	1.15		
Do	81	7:02 p. m.	D. N.	2.20	8:16 p. m.	9:06 p. m.	0.10	0.19	0.22	0.33	0.52	0.64	0.72	0.81	0.91	0.98	1.08				
Montgomery, Ala.	81	D. N.	8:40 p. m.	2.33	6:45 p. m.	6:53 p. m.	1.86	0.25	0.34												
Mount Weather, Va.	11-12			1.70															*		
Nantucket, Mass.	12			1.08															0.87		
Nashville, Tenn.	81			1.16															0.44		
New Haven, Conn.	12-13			1.55															0.58		
New Orleans, La.	6			1.73															0.42		
New York, N. Y.	12			1.81															0.37		
Norfolk, Va.	11-12	7:55 p. m.	D. N.	1.06	1:54 a. m.	1:59 a. m.	0.69	0.83											*		
Northfield, Vt.	7-8			0.71															0.37		
North Head, Wash.	1-2			1.28															0.37		
Oklahoma, Okla.	8-4			1.23															0.19		
Omaha, Nebr.	81			0.22															0.05		
Palestine, Tex.	30-31			1.28															0.40		
Parkersburg, W. Va.	26-27			0.37																	
Pensacola, Fla.	10-11	5:50 p. m.	2:15 a. m.	1.32	9:59 p. m.	10:14 p. m.	0.87	0.09	0.31	0.44											
Peoria, Ill.	31			0.24															*		
Philadelphia, Pa.	12			1.06															0.41		
Pittsburg, Pa.	26-27			0.46																	
Portland, Me.	12-13			1.17															0.34		
Portland, Oreg.	19-20			0.96															0.25		
Pueblo, Colo.	15			0.17															*		
Raleigh, N. C.	11			1.14															0.43		
Richmond, Va.	11-12	7:48 p. m.	D. N.	1.50	12:31 a. m.	12:50 a. m.	0.68	0.09	0.21	0.36	0.46										
Rochester, N. Y.	12-13			0.69															*		
Sacramento, Cal.	13-14			1.57															0.52		
St. Louis, Mo.	11-12			1.05															*		
St. Paul, Minn.	81			0.36															*		
Salt Lake City, Utah	14-15			0.22															*		
San Antonio, Tex.	5-6			0.86															0.41		
San Diego, Cal.	14			0.38															0.35		
Sandusky, Ohio	11-12			0.80															*		
San Francisco, Cal.	23-24			0.94															0.32		
Savannah, Ga.	11	D. N.	2:10 p. m.	1.78	10:43 a. m.	11:07 a. m.	0.74	0.06	0.14	0.26	0.40	0.56									
Soraton, Pa.	12-13			0.92															0.29		
Seattle, Wash.	19			0.62															0.25		
Shreveport, La.	30-31			1.12															0.52		
Spokane, Wash.	16-17			0.68															*		
Springfield, Ill.	11-12			0.91															*		
Springfield, Mo.	3-4			1.16															*		
Syracuse, N. Y.	7-8			1.20															*		
Tampa, Fla.	11	D. N.	7:10 a. m.	0.61	5:36 a. m.	5:46 a. m.	0.01	0.25	0.81												
Taylor, Tex.	30-31			0.39															0.22		
Thomasville, Ga.	6-7			3.15															0.49		
Toledo, Ohio	11-12			1.51															0.21		
Topeka, Kans.	3			0.06															0.08		
Valentine, Nebr.	81			0.07															*		
Vicksburg, Miss.	81	1:00 p. m.	3:32 p. m.	0.46	2:08 p. m.	2:18 p. m.	0.06	0.33											0.37		
Washington, D. C.	11-12			1.23																	
Wichita, Kans.	8			0.16															*		
Wytheville, Va.	11-12			1.42															*		
Yankton, S. Dak.	31			0.09															*		
San Juan, P. R.	25-26	8:43 p. m.	D. N.	0.96	10:22 p. m.	10:32 p. m.	0.10	0.27	0.37												

\*Self-register not working. †No precipitation during the month.

TABLE III.—Data furnished by the Canadian Meteorological Service, January, 1908.

Stations.	Pressure, in inches.			Temperature.			Precipitation.			Stations.	Pressure, in inches.			Temperature.			Precipitation.		
	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	
St. Johns, N. F.	In. 29.62	In. 29.76	In. 29.76	— 10	27.8 + 4.0	34.1	21.5	5.46	-0.45	15.7	Parry Sound, Ont.	In. 29.22	In. 29.95	-0.06	15.8 + 2.0	26.6	4.9	In. 3.00	-1.08 27.5
Sydney, C. B. I.	29.79	29.88	— 10	26.3 + 5.8	34.7	17.9	5.75	+0.63	16.0	Port Arthur, Ont.	29.23	29.97	-1.10	12.8 + 9.7	23.7	2.0	0.47	-0.86 4.7	
Halifax, N. S.	29.75	29.86	— 11	26.5 + 4.7	35.1	17.9	6.17	+0.40	18.9	Winnipeg, Man.	29.12	29.99	-1.12	7.8 +14.6	17.8	— 2.3	0.44	-0.44 4.4	
Grand Manan, N. B.	29.79	29.84	— 15	26.7 + 3.8	35.8	17.6	6.57	-0.34	7.1	Minnedosa, Man.	28.08	29.99	-1.11	8.9 +16.1	20.9	— 3.1	0.31	-0.49 3.1	
Yarmouth, N. S.	29.80	29.87	— 18	29.5 + 8.2	36.8	22.3	5.06	-0.35	15.2	Regina, Sask.	27.90	—	—	11.8 +15.1	22.5	0.1	0.26	-0.24 2.6	
Charlottetown, P. E. I.	29.78	29.82	— 14	21.0 + 4.0	29.1	12.9	4.67	+0.71	22.4	Medicine Hat, Alberta.	27.60	29.94	-1.18	26.3 +20.8	38.3	14.8	0.10	-0.47 1.0	
Chatham, N. B.	29.79	29.82	— 15	15.9 + 6.1	26.7	5.1	3.03	-0.56	16.9	Swift Current, Sask.	27.34	30.02	-0.07	17.7 +14.6	28.2	7.1	0.46	-0.18 4.6	
Father Point, Que.	29.75	29.78	— 20	12.6 + 4.6	21.7	3.5	1.90	-0.95	14.8	Calgary, Alberta.	26.31	29.98	-0.07	25.8 +17.4	38.3	18.2	0.08	-0.45 0.8	
Quebec, Que.	29.55	29.89	— 18	10.2 + 1.1	18.6	1.8	4.50	+0.49	36.9	Banff, Alberta.	25.30	30.09	+0.03	19.4 + 7.8	27.2	11.5	1.10	-0.09 11.0	
Montreal, Que.	29.71	29.94	— 10	18.4 + 1.7	22.6	4.2	4.71	+0.98	43.7	Edmonton, Alberta.	27.55	29.92	-1.11	17.9 +16.1	27.5	8.3	0.31	-0.37 3.1	
Rocklife, Ont.	29.32	29.96	— 06	5.6 + 0.8	6.9	1.9	— 0.89	-0.43	18.9	Prince Albert, Sask.	28.28	29.92	-1.17	8.1 +16.5	21.7	— 5.4	0.40	-0.57 4.0	
Ottawa, Ont.	29.66	30.00	— 08	11.8 + 2.2	20.9	2.6	2.40	-0.59	21.5	Battleford, Sask.	28.13	29.96	-1.12	8.2 +14.1	19.3	— 2.8	0.46	+0.06 4.6	
Kingston, Ont.	29.66	30.00	— 05	18.6 + 1.5	28.5	8.7	1.43	-2.02	9.9	Kamloops, B. C.	28.78	29.98	+0.02	27.9 + 2.9	32.7	23.0	0.62	-0.30 ...	
Toronto, Ont.	29.56	29.96	— 09	24.4 + 3.0	31.9	16.8	5.51	-0.41	19.0	Victoria, B. C.	29.93	30.03	+0.06	41.6 + 3.1	44.7	38.4	3.22	-2.17 T.	
White River, Ont.	—	—	—	—	—	—	—	—	—	Barkerville, B. C.	25.56	29.97	+0.08	20.3 + 2.5	27.1	13.6	2.50	-0.10 ...	
Port Stanley, Ont.	29.38	30.00	— 07	24.7 + 2.5	32.0	17.5	2.74	-0.25	15.0	Hamilton, Bermuda.	29.96	30.13	— 0.00	61.7 + 0.3	68.0	55.3	4.46	-0.48 ...	
Southampton, Ont.	29.21	—	—	23.9 + 3.5	30.8	17.0	2.69	-1.86	25.1	Dawson, Yukon	—	—	—	—	—	—	—	—	

TABLE IV.—Heights of rivers referred to zeros of gages, January, 1908.

Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.	Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.						Height.	Date.	Height.	Date.		
Republican River.	Miles. 42	Feet. 18	6.0	21, 24, 28	Feet. 5.1	18	Feet. 5.7	0.9	French Broad River.	Miles. 144	Feet. 4	5.9	12	Feet. 0.3	30, 31	Feet. 1.2	5.6
Clay Center, Kans.	254	22	1.0	30	0.0	1	0.4	1.0	Dandridge, Tenn.	46	14	14.0	12	1.8	26, 31	3.8	12.2
Smoky Hill-Kansas River.	160	18	3.0	22-24, 27, 28	2.4	16-18, 31	2.8	0.6	Tennessee River.	685	12	17.8	13	3.0	27, 31	5.9	14.8
Abilene, Kans.	254	22	—	—	(1-12, 15, 30)	—	—	—	Knoxville, Tenn.	590	25	13.0	14	2.0	30, 31	5.0	11.0
Manhattan, Kans.	254	22	—	—	—	—	—	—	Loudon, Tenn.	556	25	13.6	14	4.1	29	7.0	9.5
Topeka, Kans. (2).	87	21	5.9	20, 21, 25	5.6	17, 18, 27	5.7	0.3	Chattanooga, Tenn.	452	33	20.3	15	5.6	28, 29	11.3	14.7
Missouri River.	1,309	14	4.5	24	2.5	1-4	3.6	2.0	Bridgeport, Ala.	402	24	15.0	16	4.3	29, 31	8.8	10.7
Bismarck, N. Dak.	1,114	14	—	—	—	—	—	—	Guntersville, Ala.	349	31	22.5	16	7.0	30	14.5	15.6
Pierre, S. Dak. (3).	784	17	9.5	30, 31	2.9	6-8	4.4	6.6	Florence, Ala.	255	16	12.9	18	4.4	30, 31	8.8	8.6
Sioux City, Iowa.	705	15	4.9	30	2.3	1-3	3.5	2.6	Birrington, Ala.	225	26	20.4	18	7.3	31	14.5	13.1
Blair, Nebr.	481	10	— 0.7	24	—	2.6	— 1.6	1.9	Johnsonville, Tenn.	95	21	21.0	7	7.3	31	14.7	13.7
St. Joseph, Mo.	388	21	4.9	26, 27	3.6	19	4.4	1.8	Pittsburgh, Pa.	966	22	15.1	14	2.6	12	6.2	12.5
Kansas City, Mo.	231	18	3.3	—	4	2.5	2.9	0.8	Dam No. 2, Pa.	956	25	15.0	14	4.1	12	7.8	10.9
Glasgow, Mo.	199	20	6.3	31	5.4	21, 22	5.7	0.9	Beaver Dam, Pa.	925	27	21.4	14	6.2	12	10.5	15.2
Boonville, Mo.	103	24	5.2	1	4.3	22	4.7	0.9	Wheeling, W. Va.	875	36	20.5	15	6.5	12	10.8	14.0
Hermann, Mo.	—	—	—	—	—	—	—	—	Parkersburg, W. Va.	785	36	19.0	16	8.0	11, 12	11.2	11.0
Minnesota River.	127	18	3.0	2	2.2	6	2.5	0.8	Point Pleasant, W. Va.	703	39	23.7	16	8.0	12	14.3	16.7
Mankato, Minn.	254	25	22.0	18	15.2	26	16.3	6.8	Huntington, W. Va.	650	27	22.7	17	12.6	13	18.6	14.6
St. Croix River.	81	18	15.8	13	7.7	11	9.3	8.1	Catlettsburg, Ky.	651	50	28.0	17	12.0	13	18.7	16.0
Stillwater, Minn. (4).	40	28	20.3	14	8.2	11	10.9	12.1	Fortsomt, Ohio.	612	50	28.7	17	12.8	27	19.5	15.9
Illinois River.	197	18	21.4	1	16.7	31	18.9	4.7	Maysville, Ky.	559	50	28.1	17	18.1	28	19.6	15.0
La Salle, Ill.	185	14	15.7	5, 6	12.5	31	14.2	3.2	Cincinnati, Ohio.	499	50	29.9	18	4.5	28	22.0	15.4
Peoria, Ill.	177	14	5.5	1	1.0	10, 11	2.4	4.5	Madison, Ind.	418	46	24.5	1	18.4	29, 30	19.7	12.0
Conemaugh River.	73	20	6.8	1	2.0	27	8.6	4.8	Louisville, Ky.	367	28	11.0	1	6.1	30	8.7	4.9
Johnstown, Pa.	64	7	7.6	12	2.6	9-11, 31	3.2	5.0	Evanston, Ind.	184	35	25.2	1	11.5	30	19.8	13.7
Allegheny River.	177	14	5.5	1	1.0	10, 11	2.4	4.5	Mount Vernon, Ind.	148	35	24.8	2	10.6	31	19.4	14.2
Warren, Pa.	73	20	6.8	1	2.0	27	8.6	4.8	Paducah, Ky.	47	40	26.1	8	12.3	31	21.5	13.8
Parker, Pa.	29	20	13.1	18	5.1	28	7.2	8.0	Cairo, Ill.	1	45	29.0	8	17.3	31	25.3	11.7
Youngstown River.	59	10	5.4	18	1.7	21	2.5	3.7	Neosho River.	262	10	0.6	6	0.1	(22, 23, 25,	0.2	0.5
West Newton, Pa. (4).	15	23	9.4	18	1.8	11	3.4	7.6	Iola, Kans.	184	20	3.5	5	0.5	27-31	1.0	3.0
Monongahela River.	119	25	22.0	18	15.2	26	16.3	6.8	Oswego, Kans.	80	25	12.2	7	9.2	24-31	9.9	3.0
Fairmont, W. Va.	81	18	15.8	13	7.7	11	9.3	8.1	Canadian River.	99	10	4.3	6	2.9	29	3.4	1.4
Greensburg, Pa. (2).	40	28	20.3	14	8.2	11	10.9	12.1	Black Rock, Ark.	67	12	10.0	18, 14	4.1	5-11	6.5	5.9
Lock No. 4, Pa.	—	—	—	—	—	—	—	—	White River.	272	18	4.2	13	0.5	8	1.9	3.7
Muskingum River.	70	25	11.8	1	8.7	26	9.8	3.1	Calicorock, Ark.	217	18	6.7	13	2.4	8, 4	4.0	4.3
Zanesville, Ohio.	110	17	6.8	1	3.0	22	4.0	3.8	Batesville, Ark.	217	18	6.7	13	2.4	8, 4	4.0	4.3
Licking River.	110	17	6.8	1	3.0	22	7.8	18.3	Clarendon, Ark.	75	30	22.3	20, 21	14.4	4	19.0	7.9
Falmouth, Ky.	30	25	4.0	1	2.0	4, 31	2.8	2.0	Arkansas River.	832	10	1.6	31	— 1.5	6, 7, 22, 23	1.1	3.1
Beattyville, Ky.	254	30	5.6	6	0.6	4	2.1	5.0	Wichita, Kans.	551	16	4.6	7-9	3.0	28-31	8.6	1.6
Frankfort, Ky.	65	31	9.1	7, 8	6.6	27	7.6	2.5	Webbers Falls, Okla.	465	23	8.0	8	5.2	24-31	5.9	2.8
Wabash River.	171	16</															

TABLE IV.—Heights of rivers referred to zeros of gages—Continued.

Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage, Monthly range.	Stations.	Distance to mouth of river.	Flood stage on gage.	Highest water.		Lowest water.		Mean stage, Monthly range.		
			Height.	Date.	Height.	Date.					Height.	Date.	Height.	Date.			
<i>Mississippi River—Cont'd.</i>																	
La Crosse, Wis. (30).	1,819	12															
Prairie du Chien, Wis. (31).	1,759	18															
Dubuque, Iowa.	1,699	18	3.5	27	1.4	8-7	2.1										
Leonia, Iowa (1).	1,608	10	1.2	24	0.0	8	0.6	1.2									
Davenport, Iowa (1).	1,598	15	4.9	90	1.1	10	2.0	3.8									
Muscatine, Iowa.	1,582	16	5.1	28	2.2	7-10	3.1	2.9									
Galland, Iowa.	1,472	8	1.5	24	0.5	11-18	2.7	1.0									
Keokuk, Iowa.	1,468	15	1.5	28	-0.9	19	0.5	2.1									
Warsaw, Ill.	1,458	18	4.5	28	2.8	10	3.5	1.7									
Hannibal, Mo.	1,402	18	2.2	2,28	0.6	19, 20	1.5	1.6									
Grafton, Ill.	1,306	28	5.9	9, 10, 14, 24	5.0	22	5.6	0.9									
St. Louis, Mo.	1,264	30	5.0	14	3.8	31	4.4	1.7									
Chester, Ill.	1,189	30	5.8	15	3.6	23	4.4	2.2									
Cape Girardeau, Mo.	1,128	28	10.5	15, 16	7.8	23, 24, 31	8.8	2.7									
New Madrid, Mo.	1,008	34	23.9	9	14.5	31	20.9	9.4									
Luxora, Ark.	905	33	16.5	10	8.7	31	13.9	7.8									
Memphis, Tenn.	843	33	21.3	10, 11	13.6	31	18.7	7.7									
Helena, Ark.	767	42	27.4	12, 13	19.5	31	24.3	7.9									
Arkansas City, Ark.	686	42	81.0	15	24.8	31	28.0	6.7									
Greenville, Miss.	695	42	26.0	16	19.7	1	23.3	6.3									
Vicksburg, Miss.	474	45	28.6	16-18	19.5	1	25.4	9.1									
Natchez, Miss.	378	46	29.5	19	19.7	1	26.1	9.8									
Baton Rouge, La.	240	35	21.7	20	12.9	1	19.0	8.8									
Donaldsonville, La.	188	28	16.5	19-22	8.5	1	14.1	8.0									
New Orleans, La.	108	16	10.7	21	6.0	1	8.8	4.7									
<i>Athabasca River.</i>																	
Summerset, La.	127	33	25.6	19, 20	17.7	1	23.1	7.9									
Melville, La.	108	31	23.2	19, 20	21.2	1	26.0	7.0									
<i>Hudson River.</i>																	
Troy, N. Y.	154	14	8.7	1	3.7	28	5.6	5.0									
Albany, N. Y.	147	12	6.0	1	1.8	30, 31	3.6	4.7									
<i>Delaware River.</i>																	
Hancock (E. Branch), N. Y.	287	12	6.3	6, 8	3.3	30	4.3	3.0									
Hancock (W. Branch), N. Y.	287	10	6.5	11	3.1	25	4.1	3.4									
Port Jervis, N. Y.	215	14	4.8	14	0.8	31	2.3	4.0									
Phillipsburg, N. J. (4).	146	26	8.4	14	2.5	25	4.3	5.9									
Trenton, N. J.	92	18	6.0	1	2.5	30, 31	4.0	3.5									
<i>North Branch Susquehanna.</i>																	
Binghamton, N. Y.	188	16	6.1	1	2.6	26	3.4	3.5									
Wilkes-Barre, Pa.	60	17	12.0	1	5.5	22, 26, 27	7.9	6.5									
<i>West Branch Susquehanna.</i>																	
Williamsport, Pa.	89	20	9.0	14	2.8	25	4.2	6.7									
<i>Susquehanna River.</i>																	
Harrisburg, Pa.	69	17	8.0	14	2.4	31	4.4	5.6									
<i>Shenandoah River.</i>																	
Riverton, Va.	58	22	18.0	13	0.4	31	2.1	17.6									
<i>Potomac River.</i>																	
Cumberland, Md.	290	8	9.0	12	3.0	8-11, 31	3.5	6.0									
Harper's Ferry, W. Va.	172	18	19.9	18	2.0	11	6.0	17.9									
<i>James River.</i>																	
Lynchburg, Va.	260	18	16.2	13	2.2	26	3.8	14.0									
Columbia, Va.	167	18	25.9	14	6.2	27	9.7	19.7									
Richmond, Va.	111	10	13.3	14	1.2	5, 21, 22, 23	2.9	12.1									
<i>Roanoke River.</i>																	
Clarksville, Va.	196	12	9.9	9	1.0	26	3.4	8.9									
Weldon, N. C.	129	30	38.6	10	18.0	27	21.4	25.6									
<i>Tur River.</i>																	
Greenville, N. C.	21	22	17.2	15, 16	7.9	30	12.5	9.3									
<i>Deep River.</i>																	
Monroe, N. C.	171	25	20.1	8	8.5	20-26, 31	7.8	11.6									
<i>Cape Fear River.</i>																	
Fayetteville, N. C.	112	38	38.3	14	6.2	26	18.1	30.1									
<i>Pedee River.</i>																	
Cheraw, S. C.	149	27	31.6	14	4.8	27, 31	14.8	26.8									
Smiths Mills, S. C. (4).	51	16	17.4	20, 21	12.0	31	15.4	5.4									
<i>Lynch Creek.</i>																	
Effingham, S. C.	85	12	13.1	15	5.5	30, 31	8.1	7.6									
<i>Black River.</i>																	
Kingstree, S. C.	45	12	10.0	15-17, 19-21	7.5	8, 31	8.7	2.5									

Figures denote number of days frozen. (a) 4 days missing.

Honolulu, T. H., latitude  $21^{\circ} 19'$  north, longitude  $157^{\circ} 30'$  west; barometer above sea, 38 feet; gravity correction,  $-0.057$  inch, applied. January, 1908.

Day.	Pressure.*		Air temperature.				Moisture.			Wind.			Precipitation.		Clouds.			
	8 a. m.	8 p. m.	8 a. m.	8 p. m.	Maximum.	Minimum.	Wet.	Relative humidity.	Wet.	Relative humidity.	8 a. m.	8 p. m.	Amount.	Kind.	8 a. m.		8 p. m.	
															8 a. m.	8 p. m.	Amount.	Kind.
1	29.99	29.99	78.5	78.0	78	71	65.5	65	65.0	65	e.	9	10	Cu.	Few	S.	ne.	
2	30.05	30.04	74.0	73.0	77	67	64.5	60	65.0	65	e.	9	9	Cu.	0	0	0	
3	30.07	30.06	78.0	72.0	77	71	64.0	61	64.0	65	ne.	17	6	Cu.	0	0	0	
4	30.09	30.05	73.7	72.0	78	68	65.0	62	66.0	73	e.	6	5	Cu.	1	S.	ne.	
5	30.08	30.05	71.0	70.0	79	66	65.0	72	67.0	86	w.	2	2	Cu.	0	A.-s.	0	
6	30.08	30.09	78.7	70.0	79	66	65.4	64	65.0	77	e.	4	4	Cu.	0	0	0	
7	30.11	30.09	69.0	68.5	76	64	61.5	65	63.0	74	ne.	4	8	Cu.	1	S.-cu.	ne.	
8	30.11	30.08	71.5	68.5	77	64	61.7	57	63.0	74	e.	4	5	Cu.	Few	A.-s.	0	
9	30.13	30.08	70.0	68.5	77	68	60.8	56	60.0	60	n.	4	6	Cu.	1	Cu.	ne.	
10	30.09	30.08	66.2	66.5	74	61	59.0	65	61.0	73	e.	1	5	Cu.	0	A.-s.	s.	
11	30.13	30.11	69.4	68.0	75	62	60.8	61	62.0	71	ne.	4	4	Cu.	Few	A.-s.	w.	
12	30.09	30.01	72.4	67.5	76	68	63.6	62	61.0	69	e.	3	5	Cu.	8	A.-s.	sw.	
13	30.02	29.98	69.4	69.0	77	66	62.1	71	61.0	63	ne.	4	3	Cu.	3	A.-cu.	sw.	
14	30.08	30.10	72.0	68.0	76	66	65.1	69	62.0	71	ne.	3	8	Cu.	0	7	ne.	
15	30.18	30.16	68.0	70.2	73	66	58.0	54	59.0	50	ne.	10	10	T.	6	Cu.	ne.	
16	30.20	30.18	69.1	70.0	74	63	58.0	51	61.0	59	ne.	12	15	Cu.	7	Cu.	ne.	
17	30.17	30.11	70.2	70.5	75	67	59.2	51	63.0	66	e.	10	6	Cu.	6	Cu.	e.	
18	30.13	30.12	73.0	72.0	77	68	61.0	50	63.0	61	e.	10	18	Cu.	5	Cu.	ne.	
19	30.18	30.17	73.0	72.0	77	65	63.2	58	63.5	63	e.	13	15	Cu.	7	Cu.	ne.	
20	30.20	30.15	73.0	72.2	76	67	63.0	57	64.2	65	e.	18	16	Cu.	2	Cu.	ne.	
21	30.16	30.14	73.4	72.0	77	70	68.0	56	63.5	63	e.	11	9	Cu.	4	Cu.	ne.	
22	30.17	30.12	72.3	72.0	76	70	61.0	52	63.0	61	ne.	17	12	Cu.	2	A.-s.	w.	
23	30.18	30.11	72.2	71.0	77	70	62.0	56	63.0	64	ne.	8	8	Cu.	0	0	0	
24	30.18	30.12	69.7	71.0	78	66	62.0	65	64.0	68	ne.	6	2	Cu.	9	S.	ne.	
25	30.12	30.10	71.0	69.0	78	68	63.0	64	64.0	76	ne.	1	10	Cu.	3	A.-s.	nw.	
26	30.09	30.04	71.4	69.0	78	65	64.0	67	64.0	76	ne.	5	1	Cu.	0	0	0	
27	30.05	30.02	69.0	70.0	77	63	63.0	72	66.0	81	0	0	5	Cu.	0	0	0	
28	30.04	30.03	78.0	72.0	79	65	66.0	69	66.0	73	e.	2	8	Cu.	Few	A.-s.	0	
29	30.08	30.08	73.0	71.5	78	69	66.5	71	64.5	68	e.	3	14	Cu.	1	A.-s.	n.	
30	30.09	30.10	73.0	70.0	78	69	65.0	66	67.0	86	e.	14	15	Cu.	1	S.	ne.	
31	30.09	30.08	72.0	71.2	76	66	65.0	69	64.2	68	e.	9	6	Cu.	5	N.	ne.	
Mean....	30.106	30.085	71.5	70.8	76.8	66.3	62.8	61.8	63.5	68.8	e.	7.2	7.9	Cu.	2.9	{A.-s. Cu.}	ne.	

Observations are made at 8 a.m. and 8 p.m., local standard time, which is that of  $157^{\circ} 30'$  west, and is 5<sup>h</sup> and 30<sup>m</sup> slower than 75<sup>th</sup> meridian time. \*Pressure values are reduced to sea level and standard gravity.

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